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Exhibit R-2, RDT&E Budget Item Justification	Date: FEBRUARY 1999
RDT&E 1319/Budget Activity 5	AEGIS Combat System Engineering, PE0604307

COST (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total P.E. Cost	110.14	178.43*	204.48	192.27	178.69	142.84	114.45	95.83	CONT.	CONT.
Surf Combatant Combat Sys/K1447	72.97	129.40	193.01	187.02	174.35	138.42	109.93	91.22	CONT.	CONT.
Surf Combatant Weapon Sys Mod/K1776	5.43	7.19	4.21	4.26	4.32	4.40	4.49	4.58	CONT.	CONT.
Surf Combatant Weapons Dev/K1937	0.00	6.86	7.24	0.97	0.01	0.01	0.02	0.02	CONT.	CONT.
Smart Ship Project/K2308	0.90	0.56	0.02	0.02	0.01	0.01	0.01	0.01	CONT.	CONT.
TBMD/UYQ-70 Architecture Dev/K2424	30.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CONT.	CONT.
CEC Integration on DDG-51 Ships/K2636	0.00	9.48	0.00	0.00	0.00	0.00	0.00	0.00	CONT.	CONT.
AEGIS Baseline Software Development/K2637	0.00	19.95	0.00	0.00	0.00	0.00	0.00	0.00	CONT.	CONT.
DDG-51 Composite Director Room/K2638	0.00	4.99	0.00	0.00	0.00	0.00	0.00	0.00	CONT.	CONT.
Quantity of RDT&E Articles & cost	Not applicable.									

A. Mission Description and Budget Item Justification

The AEGIS Combat System provides immediate and effective capability to counter the current and expected air, surface and sub-surface threats. Changes in the threat capability and advances in technology such as fiber optics, local area networks, and high performance computing require corresponding Weapon System and Combat System changes. This program provides the Combat System engineering and selected weapons development necessary for a continued increase in the capability of the Combat System in AEGIS cruisers and destroyers. In addition to developing and integrating improvements to the AEGIS Weapon System, this program integrates combat capabilities developed in other Navy R&D programs into the AEGIS Combat System. Modifications of AEGIS Weapon System computer programs must be made to integrate these capabilities into the AEGIS Combat System so that battle effectiveness and Combat System performance will be retained against the evolving threat. Selected Weapon and Combat System upgrades will be backfit into CG 47 Class and DDG 51 Class ships already in the Fleet, providing key warfighting capability while reducing life cycle maintenance costs.

* This includes an intended FY 1999 reprogramming (DD1415) for \$15.20.

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B. Program Change Summary:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
FY 1999 President's Budget:	118.54	132.57	175.95
Appropriated Value:	148.13	164.07	
Adjustment to FY 1998 Appropriated Value/ FY 1999 President's Budget:	-37.99	+14.36	+28.53
FY 2000 PRES Budget Submit:	110.14	178.43	204.48

Funding: FY 1998 change due to SBIR Reduction, Federal Technology Transfer, Navy wide adjustment, and transfer of High Power Discriminator (HPD) money to BMDO. FY99-00 funding changes are due to two factors: 1) To resolve recently identified interoperability issues and integration requirements for Aegis (ADS Mk6)/CEC, and 2) Subsequent extension of Cooperative Engagement Capability (CEC) OPEVAL.

Schedule: Baseline 6 Phase III development will be extended one year and Baseline 7 Phase I will be extended 10 months to: 1) Complete necessary testing to ensure that those baselines will meet all functional requirements and 2) Incorporate lessons learned from the Baseline 6 Phase I AEGIS Weapon System (AWS)/CEC integration effort. All baselines will still be delivered to shipbuilders within contractual dates.

Technical: Not applicable.

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
RDT&E 1319, Budget Activity 5	AEGIS Combat System Engineering, PE0604307	Surface Combatants Combat System Improvements, K1447 CEC Integration on DDG-51 Ships, K2636 AEGIS Baseline Software Development, K2637

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
K1447	72.97	129.40	193.01	187.02	174.35	138.42	109.93	91.22	CONT.	CONT.
K2636	0.00	9.48	0.00	0.00	0.00	0.00	0.00	0.00	CONT.	CONT.
K2637	0.00	19.95	0.00	0.00	0.00	0.00	0.00	0.00	CONT.	CONT.
Total	72.97	158.83	193.01	187.02	174.35	138.42	109.93	91.22	CONT.	CONT.
RDT&E Articles Qty	Not applicable.									
Note: Projects K2636 and K2637 are FY1999 Congressional plus-ups. These projects fund efforts that are an integral part of the core Surface Combatant Combat Systems Improvements program. For consistency across the FYDP, these projects are grouped together in FY1999.										

A. Mission Description and Budget Item Justification: This program provides AEGIS Cruiser and Destroyer Combat System upgrades and integrates new equipment and systems to pace the threat and capture advances in technology such as fiber optics and distributed architecture. Combat Systems are upgraded in baselines. Baseline 2 (CG 52-58) consists of the Vertical Launching System, TOMAHAWK Weapon System, and Anti-Submarine Warfare upgrades. Baseline 3 (CG 59-64) includes the AN/SPY-1B Radar and AN/UYQ-21 consoles. Baseline 4 (CG 65-73) integrates the AN/UYK-43/44 computers with superset computer programs developed for the DDG 51. Baseline 5 was introduced in FY 1992 ships and includes the Joint Tactical Information Distribution System (JTIDS) Command and Control Processor, Tactical Data Information Link 16, Combat Direction Finding, Tactical Data Information Exchange System, AN/SLQ-32 (V)3 Active Electronic Counter Countermeasures, and AEGIS Extended Range (ER) Missile. Baseline 5 was developed in three steps (phases): Phase I integrated AEGIS ER and supported the missile Initial Operational Capability; Phase II integrated system upgrades including Deceptive Electronic Countermeasures, Track Load Control algorithms, and Track Initiation Processor; Phase III integrated JTIDS and the OJ-663 color display Tactical Graphics Capability into the AEGIS Combat System. Baseline 6 Phase I supports OPEVAL of CEC in CGs 66 and 69 and will be introduced in the DDG 51 class beginning with the last ship in FY94, DDG 79. Baseline 6 Phase III is planned for the first ship in FY 1997. Baseline 6 Phase III is the designation for the combat system upgrade resulting from consolidation of the previous Baseline 6 Phase II with functions designed to introduce Theater Ballistic Missile Defense (TBMD) to in-service ships. Baseline 6 upgrades will also include embarked helicopters, Fiber Optics as applied to Data Multiplexing (FODMS), implementation of affordability initiatives, the Radar Set Controller Environmental Simulator (RSCES) and Battle Force Tactical Trainer (BFTT), Advanced Display System, Evolved SEASPARROW Missile (ESSM), Identification (ID) upgrades Phase I, Advanced TOMAHAWK Weapon System (ATWCS) Phase II, Fire Control System Upgrades, and the Joint Maritime Command Information System (JMCIS). Baseline 7 Phase I is planned for the third MYP DDG-51 Class ship in FY 1998. Major Baseline 7 upgrades include but are not limited to: AN/SPY-1D(V) Radar upgrade, COTS-based advanced computer processing, and Advanced Integrated Electronic Warfare System (AIEWS). There is a follow-on baseline planned for integrated land attack and fully distributed computer architecture. The Cruiser Conversion program will upgrade cruisers with Theater Ballistic Missile Defense, land attack, and Area Air Defense Commander (AADC) capabilities, along with "Smart Ship" like Integrated Control Systems.

FY 1998 ACCOMPLISHMENTS:

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
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- (\$13.61) Conducted element test and evaluation (ET&E) and multi-element integration testing (MEIT) for Baseline 6 Ph I, focusing on achieving AWS stability in preparation for CEC OPEVAL and forward-fit baseline development.
- (\$23.10) Conducted Baseline 6 Phase III consolidated Preliminary Design Review (PDR)/Critical Design Review (CDR) in accordance with the Baseline Consolidation Plan. Began computer program coding, debugging, and testing. Completed RSCES EDM Development.
- (\$15.41) Completed system definition/design for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I and started system design. Conducted Baseline 7 Phase I System Design Review (SDR) for integration of upgrades into the AEGIS Combat System engineering.
- (\$6.10) Continued to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (\$14.75) Provided funds for labs and field activities to support forward fit baseline upgrade in order to conduct engineering and scientific studies and analysis to minimize the risk in the introduction of increased warfighting capability including TBMD, CEC, ESSM, and AIEWS into the AEGIS Combat System. Studies produced by the Applied Physics Lab and the Naval Surface Warfare Center, Dahlgren Division (NSWC, DD) ensure effective introduction of Commercial Off the Shelf Technology (COTS). NSWC, DD personnel also provided on site technical support at contractor facilities during development, testing, and evaluation of upgrades to the AEGIS Combat System.

FY 1999 PLAN:

- (\$1.00) Begin modifications to the AWS computer program to allow incorporation of AAW capability into the SM2 BLK IVA missile.
- (\$42.20) Continue with ET&E and MEIT for Baseline 6 Ph I. Deliver program to shipyard for first level testing on new construction destroyers. Continue with integration of CEC Baseline 2 functionality into this baseline. Provide support for CEC DT/OT. Continue preparation for CEC OPEVAL.
- (\$29.70) Continue Baseline 6 Phase III computer program code, debugging, and testing. Conduct Critical Design Review (CDR) II. Begin extensive ET&E and MEIT at the Combat System Engineering Development Site (CSEDS).
- (\$34.75) Continue system engineering for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I. Conduct Baseline 7 Phase I PDR for integration of upgrades into the AEGIS Combat System.
- (\$17.00) Start system definition and engineering for the AEGIS Cruiser Conversion Program to incorporate warfighting capabilities including TBMD, AADC, and land attack into Baseline 2, 3, and 4 Cruisers. This includes computer program modifications.
- (\$8.00) Field an AADC User Operational Evaluation System.
- (\$7.20) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.

FY 1999 PLAN (Continued)

- (\$15.52) Provides funds for labs and field activities to support forward fit baseline upgrade in order to conduct engineering and scientific studies and analysis to minimize the risk in the introduction of increased warfighting capability including TBMD, CEC, ESSM, and AIEWS into the AEGIS Combat System. Studies produced by the Applied Physics Lab and the Naval Surface Warfare Center, Dahlgren Division (NSWC, DD) ensure effective introduction of

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
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Commercial Off the Shelf Technology (COTS). NSWC, DD personnel also provide on site technical support at contractor facilities during development, testing, and evaluation of upgrades to the AEGIS Combat System.

- (\$3.46) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

FY 2000 PLAN:

- (\$1.20) Continue modifications to the AWS computer program to allow incorporation of AAW capability into the SM2 BLK IVA missile.
- (\$32.50) Complete ET&E and MEIT and conduct demonstration of Baseline 6 Phase I. Deliver program to shipyards for final testing in new construction destroyers. Continue with system testing of program for certification for fleet-wide use for destroyers. Support CEC OPEVAL on CGs 66 and 69.
- (\$62.20) Continue with extensive Baseline 6 Phase III ET&E and MEIT at CSEDS and the Production Test Center (PTC). Deliver program to shipyards for AWS testing in new construction ships.
- (\$43.35) Conduct Critical Design Review (CDR) and begin code, debug and test (CDT) for 7 Phase I computer program. Develop radar handbook and technical manuals associated with introduction of SPY-1D(V) radar.
- (\$28.40) Begin System Design Review for the Cruiser Conversion Program to incorporate warfighting capabilities including TBMD, AADC, and land attack into Baseline 2, 3, and 4 Cruisers. This includes computer program modifications.
- (\$1.00) Finish integrating modifications to the AADC User Operational Evaluation System (UOES).
- (\$8.00) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (\$16.36) Provides funds for labs and field activities to support forward fit baseline upgrade in order to conduct engineering and scientific studies and analysis to minimize the risk in the introduction of increased warfighting capability including TBMD, CEC, ESSM, and AIEWS into the AEGIS Combat System. Studies produced by the Applied Physics Lab and the Naval Surface Warfare Center, Dahlgren Division (NSWC, DD) ensure effective introduction of Commercial Off the Shelf Technology (COTS). NSWC, DD personnel also provide on site technical support at contractor facilities during development, testing, and evaluation of upgrades to the AEGIS Combat System.

▪ B. Other Program Funding Summary:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Complete	Total Cost
SCN LI2122	3,355.00	2,659.00	2,681.70	2,843.70	2,619.70	3,081.10	0.00	0.00	CONT.	CONT.
DDG-51										
OPN LI5246	23.00	93.80	86.70	71.70	167.60	303.30	386.50	458.70	N/A.	1,591.30

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
RDT&E 1319, Budget Activity 5	AEGIS Combat System Engineering, PE0604307	Surface Combatants Combat System Improvements, K1447 CEC Integration on DDG-51 Ships, K2636 AEGIS Baseline Software Development, K2637

AEGIS Supt Eqp

Related RDT&E:

PE 0604867C (Navy Area Missile Defense-EMD)

PE 0603658N (Cooperative Engagement Capability)

PE 0603382N (Advanced Combat System Technology)

PE 0604755N (Ship Self Defense)

PE 0603868C (Navy Theater Wide Missile Defense)

PE 0604366N (Standard Missile Improvements)

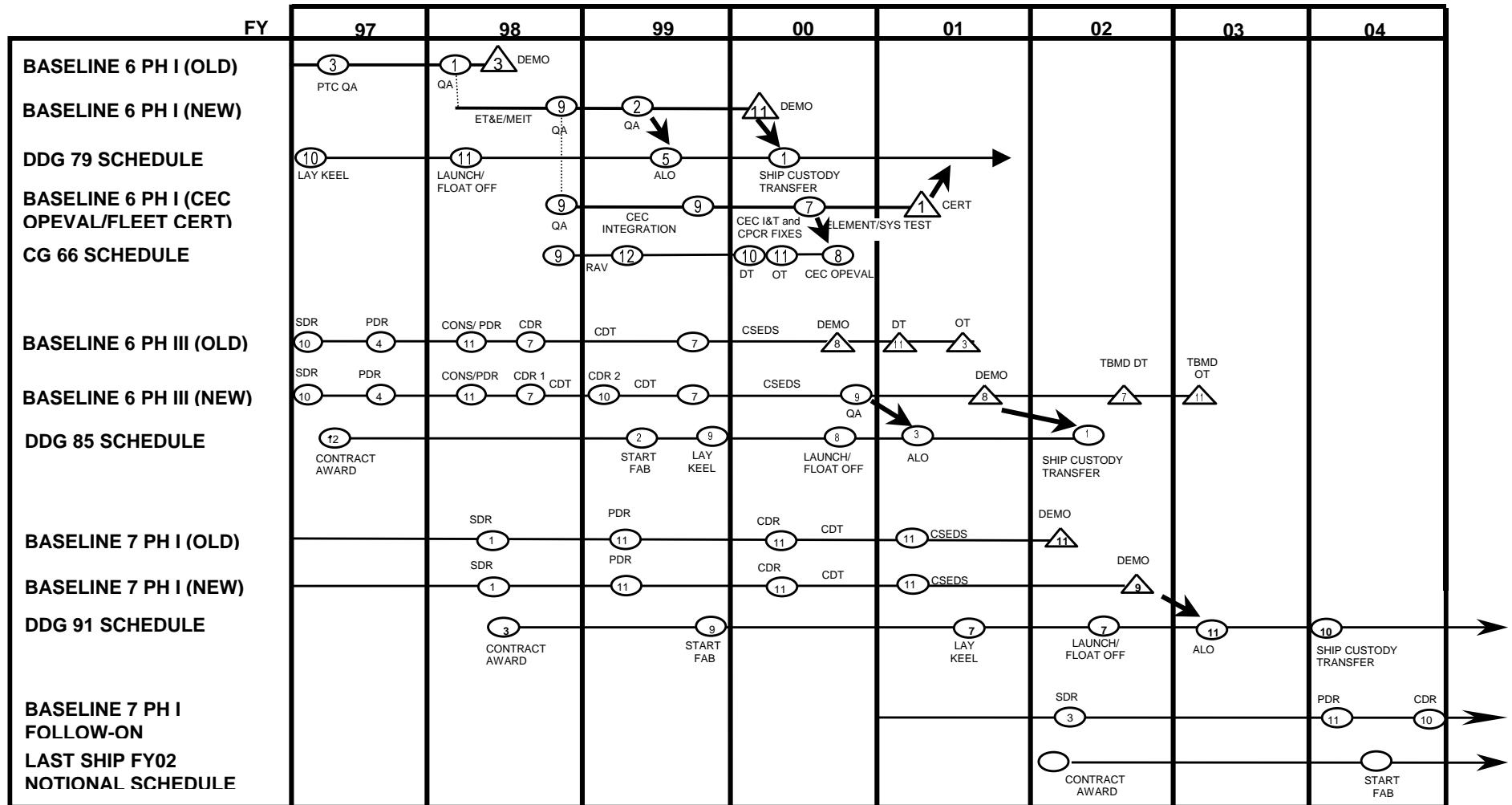
C. Acquisition Strategy: Combat System Improvements are implemented in Baselines as described in the project mission statement. In FY 1998, Lockheed Martin was awarded a five year omnibus contract (sole source) to develop and integrate combat system improvements, which will fund all remaining AEGIS Baseline Upgrade Development efforts. After the baseline has been completed and tested, the computer program and associated equipment are delivered to the new construction shipbuilders where the program and equipment are installed and tested along with all other elements of the shipboard combat system and associated combat support systems. The computer program is a GFE deliverable to the Production Test Center for equipment test and check out.

D. Schedule Profile: See following page.

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NOTE: IOC = SHIP CUSTODY TRANSFER (SCT)

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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
RDT&E 1319, Budget Activity 5	AEGIS Combat System Engineering, PE0604307	Surface Combatants Combat System Improvements, K1447 CEC Integration on DDG-51 Ships, K2636 AEGIS Baseline Software Development, K2637

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	SS/CPAF	Lockheed Martin, Moorestown, NJ	0.00	0.59		1.70				CONT.	CONT.	CONT.
Systems Engineering	SS/CPAF	Lockheed Martin, Moorestown, NJ	295.68	75.94	3/95	119.57	3/95			CONT.	CONT.	CONT.
	SS/CPFF	Applied Physics Lab, Baltimore, MD	19.62	17.42	10/96	3.40	10/96			CONT.	CONT.	CONT.
	WR	Naval Surface Warfare Ctr, Dahlgren, VA	33.59	39.58	12/98	38.41	12/99			CONT.	CONT.	CONT.
	WR	Naval Surface Warfare Ctr, Port Hueneme, CA	0.00	4.40	N/A	5.15	12/99			CONT.	CONT.	CONT.
	SS/CPAF	Planning Consultants, Inc., VA Beach, VA	0.00	2.34	3/97	1.97	3/97			CONT.	CONT.	CONT.
	SS/CPAF	Tracor, Rockville, MD	20.12	1.71	3/97	1.72	3/97			CONT.	CONT.	CONT.
	SS/CPAF	Ingalls Planning Yard, Pascagoula, MS	0.00	2.53	3/99	0.00	N/A			CONT.	CONT.	CONT.
Miscellaneous			30.54	0.00		1.00				CONT.	CONT.	CONT.
Tooling Miscellaneous			0.00	0.05		0.11				CONT.	CONT.	CONT.

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Exhibit R-3 Project Cost Analysis
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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
RDT&E 1319, Budget Activity 5	AEGIS Combat System Engineering, PE0604307	Surface Combatants Combat System Improvements, K1447 CEC Integration on DDG-51 Ships, K2636 AEGIS Baseline Software Development, K2637

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Award Fees	SS/CPAF	Lockheed Martin, Moorestown, NJ	41.14	10.17		15.63				CONT.	CONT.	CONT.
Miscellaneous			2.79	0.45		0.51				CONT.	CONT.	CONT.
Configuration Management Miscellaneous				0.40		0.00				CONT.	CONT.	CONT.
Subtotal Product Development			443.95	155.58		189.17				CONT.	CONT.	CONT.
Software Development Miscellaneous			0.47	0.27		0.30				CONT.	CONT.	CONT.
Travel Miscellaneous			0.61	0.35		0.36				CONT.	CONT.	CONT.
Integrated Logistics Support Miscellaneous			0.70	0.40		0.40				CONT.	CONT.	CONT.
Configuration Management Miscellaneous			0.65	0.38		0.18				CONT.	CONT.	CONT.
Technical Data	SS/CPAF	Lockheed Martin, Moorestown, NJ		0.73		1.23				CONT.	CONT.	CONT.
Miscellaneous			1.45	0.00		0.06				CONT.	CONT.	CONT.
Award Fees Miscellaneous			0.00	0.10		0.17				CONT.	CONT.	CONT.
Subtotal Support			3.88	2.23		2.70				CONT.	CONT.	CONT.

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Exhibit R-3 Project Cost Analysis
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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
RDT&E 1319, Budget Activity 5	AEGIS Combat System Engineering, PE0604307	Surface Combatants Combat System Improvements, K1447 CEC Integration on DDG-51 Ships, K2636 AEGIS Baseline Software Development, K2637

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total <u>PYs</u> Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation Miscellaneous			1.05	0.14		0.00				CONT.	CONT.	CONT.
Operational Test & Evaluation Miscellaneous			4.41	0.59		0.90				CONT.	CONT.	CONT.
Subtotal T&E			5.46	0.73		0.90				CONT.	CONT.	CONT.

Program Management Support Miscellaneous			3.90	0.29		0.24				CONT.	CONT.	CONT.
Subtotal Management			3.90	0.29		0.24				CONT.	CONT.	CONT.
Total Cost			431.22	158.83		193.01				CONT.	CONT.	CONT.

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Exhibit R-3 Project Cost Analysis
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Exhibit R-2a, RDT&E Project Justification			Date: FEBRUARY 1999
RDT&E 1319/Budget Activity 5	AEGIS Combat System Engineering, PE0604307N	Surface Combatant Weapon System Mod, K1776	

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	5.43	7.19	4.21	4.26	4.32	4.40	4.49	4.58	CONT.	CONT.
RDT&E Articles Qty	Not applicable.									

A. Mission Description and Budget Item Justification

This program provides for modifications to the AEGIS Weapon System MK-7 to counter the threat as articulated in ONI System Threat Assessment Report, ONI TA #046-93 dated May 1993 and subsequent updates. The modifications will be introduced into CG 47 Class and DDG 51 Class ships.

FY 1998 ACCOMPLISHMENTS:

- (\$1.45) Continued AN/SPY-1 Signal Processor upgrade efforts (Tactical Environmental Processor (TEP), Signal Processor Over Temperature, and Qualification test improvements). Began to design and develop changes to the Electronic Counter Measures Analysis (ECMA) function to enhance AN/SPY-1B/D Signal Processor performance.
- (\$1.60) Continued SPY-1 mods. Began system studies and analysis for TEP enhancements.
- (\$0.40) Continued Operational Readiness Test System (ORTS) Upgrade for Baseline 3, 4, and 5 design, development, and engineering.
- (\$1.98) Provided the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site to supplement Project K1447 on one-time basis.

FY 1999 PLAN:

- (\$1.81) Continue AN/SPY-1 Signal Processor upgrade efforts (TEP, Signal Processor Over Temperature, and Qualification test improvements). Continue to design and develop changes to the Electronic Counter Measures Analysis (ECMA) function to enhance AN/SPY-1B/D Signal Processor performance.
- (\$3.15) Continue SPY-1 mods and TIP enhancements.
- (\$1.37) Continue Operational Readiness Test System (ORTS) Upgrade for Baseline 3, 4, and 5 design, development, and engineering.
- (\$0.71) Initiate requirements definition for Common Moving Target Indicator (MTI)/TBMD processor
- (\$0.15) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

FY 2000 PLAN:

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- (\$1.69) Continue SPY-1 mods and TEP enhancements.
- (\$0.40) Continue Operational Readiness Test System (ORTS) Upgrade for Baseline 3, 4, and 5 design, development, and engineering.
- (\$2.12) Continue requirements definition for Common MTI/TBMD processor.

B. Other Program Funding Summary:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>Complete</u>	<u>Cost</u>
OPN LI5246	23.00	93.80	86.70	71.70	167.60	303.30	386.50	458.70	CONT.	1,591.13
AEGIS Supt Eqp										

Related RDT&E: Not applicable.

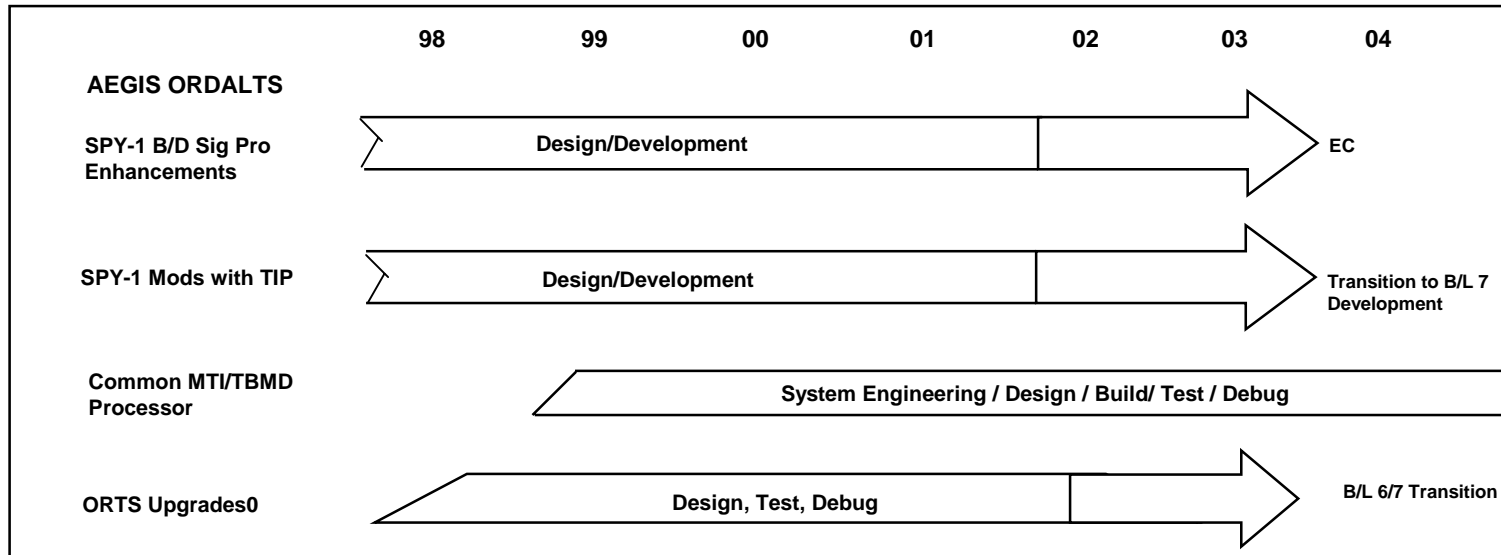
- C. Acquisition Strategy: Lockheed Martin is the sole producer of the AEGIS Weapon System (AWS) except for the AN/SPY-1 Radar transmitter and the MK 99 CWI transmitter and illuminator which are produced by Raytheon. It is anticipated that all AWS modifications will be procured from the original equipment manufacturer.

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D. Schedule Profile



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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
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Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development Miscellaneous			0.00	0.60		0.00				CONT.	CONT.	CONT.
Systems Engineering	SS/CPAF	Lockheed Martin/ Moorestown, NJ	16.80	1.83	3/95	2.46	3/95			CONT.	CONT.	CONT.
Miscellaneous			3.76	1.69		0.83				CONT.	CONT.	CONT.
Configuration Management Miscellaneous			0.00	0.00		0.40				CONT.	CONT.	CONT.
Software Development Miscellaneous			0.00	0.35		0.00				CONT.	CONT.	CONT.
Technical Data Miscellaneous			0.00	0.30		0.00				CONT.	CONT.	CONT.
Award Fees Miscellaneous			2.34	0.30		0.39				CONT.	CONT.	CONT.
Subtotal Product Development			22.90	5.07		4.08				CONT.	CONT.	CONT.
Training Development Miscellaneous			0.20	0.32		0.00				CONT.	CONT.	CONT.
Configuration Management Miscellaneous			0.22	0.35		0.00				CONT.	CONT.	CONT.
Technical Data Miscellaneous			0.56	0.88		0.13				CONT.	CONT.	CONT.
Award Fee Miscellaneous			0.08	0.12		0.00				CONT.	CONT.	CONT.
Subtotal Support			1.06	1.67		0.13				CONT.	CONT.	CONT.

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Exhibit R-3 RDT&E Project Cost Analysis
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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
RDT&E 1319, Budget Activity 5	AEGIS Combat System Engineering, PE0604307	Surface Combatant Weapon System Mod, K1776

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total <u>PYs</u> Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation Micellaneous			0.00	0.45		0.00				CONT.	CONT.	CONT.
Subtotal T&E			0.00	0.45		0.00				CONT.	CONT.	CONT.
Subtotal Management	Not applicable.											
Total Cost			23.96	7.19		4.21				CONT.	CONT.	CONT.

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Exhibit R-3 RDT&E Project Cost Analysis
(Exhibit R-3, Page 15 of 19)

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
RDT&E 1319/Budget Activity 5	AEGIS Combat System Engineering PE0604307N	Surface Combatant Weapons Development, K1937

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	0.00	6.86	7.24	0.97	0.01	0.01	0.02	0.02	CONT.	CONT.
RDT&E Articles Qty	Not applicable.									

A. Mission Description and Budget Item Justification

This program is required to develop selected systems and subsystems for the ARLEIGH BURKE (DDG 51) class ships. This project funds development of equipment for the AEGIS Weapon System, as opposed to the costs of integrating elements into the Combat System which is funded in project K1447. The changes are in the transmitter, signal processor, and radar control computer. Two new efforts will start in FY 1999:

- Development of the AAW requirements and design for a common signal processor (CSP) which builds upon the risk reduction test beds being developed for Navy Theater Wide (NTW) defense under BMDO funding. This NTW CSP is required to provide exo-atmospheric discrimination capability. The common signal processor effort will incorporate AAW functions into the signal processor functions being developed for NTW.
- Integration of the AN/SPQ-9B radar into the AEGIS Weapon System to improve capability against the advanced low-altitude threat.

FY 1998 ACCOMPLISHMENTS: Not applicable.

FY 1999 PLAN:

- (\$2.94) Initiate expanded common signal processor design for the AN/SPY-1 Radar and include advanced AAW functionality and features. The expanded signal processor design will add AAW functionality to and leverage the common signal processor's TBMD functionality design currently being pursued via TBMD funding. The advanced AAW functionality will implement adaptive digital signal processing to improve low altitude clutter rejection performance and Electronic counter-countermeasures (ECCM) capabilities.
- (\$3.76) Initiate the design for the integration of the AN/SPQ-9B Radar (or its advanced variant) in the AEGIS Weapon System. The design will include both AAW and Gun Weapons System (GWS) integration schemes and will seek to free-up AN/SPY-1 horizon search resources for above horizon search (i.e. TBMD).
- (\$0.16) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

FY 2000 PLAN:

- (\$3.74) Continue the design of the expanded common signal processor for the AN/SPY-1 Radar to include advanced AAW functionality which will improve low altitude clutter rejection and ECCM performance.
- (\$3.50) Complete the design for the integration of the AN/SPQ-9B into the AEGIS Weapon System.

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
RDT&E 1319/Budget Activity 5	AEGIS Combat System Engineering PE0604307N	Surface Combatant Weapons Development, K1937

B. Other Program Funding Summary:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Complete</u>	Total <u>Cost</u>
SCN LI2122	3,355.00	2,672.08	2,729.43	2,714.85	2,691.12	3,164.99	0.00	0.00	CONT.	CONT.
DDG-51										

Related RDT&E: Not applicable.

C. Acquisition Strategy:

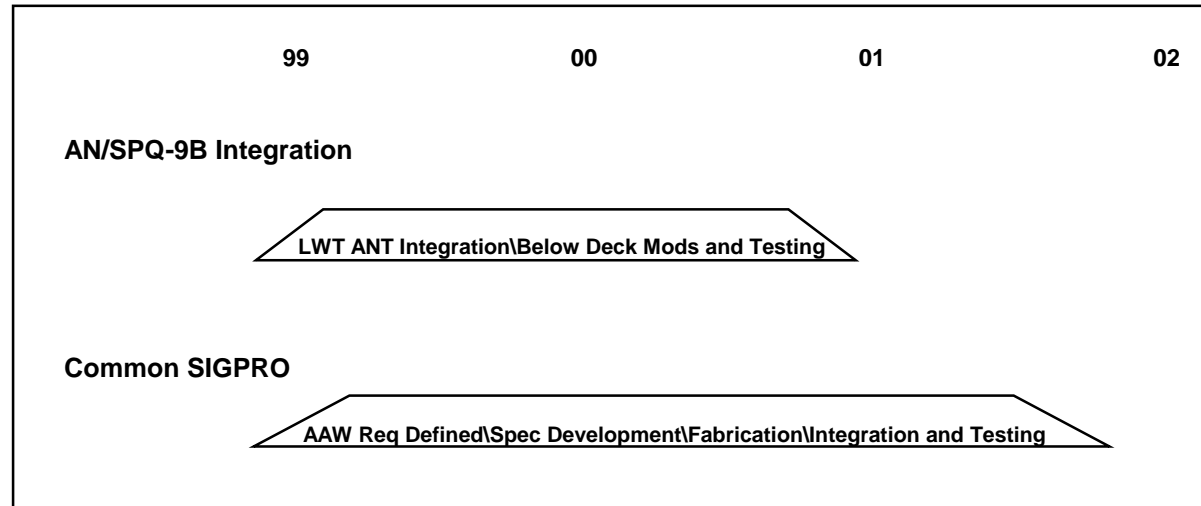
- AN/SPQ-9B Integration: Lockheed Martin (LM) is the AEGIS Combat System Engineering Agent and is the sole producer of AEGIS Weapon System (AWS) modifications. It is anticipated that all modifications needed to fully integrate the AN/SPQ-9B into the AWS will be procured from LM.
- Common Signal Processor: As the sole producer of the AN/SPY-1 Radar, LM is taking the lead in AN/SPY-1 signal processor TBMD test bed efforts. LM will be the prime for the development of the common signal processor with advanced AAW functionality, which will be built off of TBMD common signal processor efforts. Some of the portions of the development may be assigned to laboratories. Procurement of the common signal processor will be with LM.

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
RDT&E 1319/Budget Activity 5	AEGIS Combat System Engineering PE0604307N	Surface Combatant Weapons Development, K1937

D. Schedule Profile:



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Exhibit R-3 Cost Analysis										Date: FEBRUARY 1999		
RDT&E 1319/Budget Activity 5			AEGIS Combat System Engineering PE0604307N			Surface Combatant Weapons Development, K1937						

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	SS/CPAF	Lockheed Martin/Moorestown, NJ	157.93	2.24	3/95	4.33	3/95			CONT.	CONT.	CONT.
	WR	Naval Surface Warfare Ctr, Dahlgren, VA	0.00	1.50	12/98	1.50	12/99			CONT.	CONT.	CONT.
Miscellaneous			0.00	0.77		0.77				CONT.	CONT.	CONT.
Award Fees												
Miscellaneous			21.94	0.35		0.64				CONT.	CONT.	CONT.
Subtotal Product Development			179.87	4.86		7.24				CONT.	CONT.	CONT.
Technical Data	SS/CPAF	Lockheed Martin, Moorestown, NJ	0.00	2.00	3/95	0.00	3/95			CONT.	CONT.	CONT.
Subtotal Support			0.00	2.00		0.00				CONT.	CONT.	CONT.
Subtotal T&E	Not applicable.											
Subtotal Management	Not applicable.											
Total Cost			179.87	6.86		7.24				CONT.	CONT.	CONT.

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Exhibit R-3 RDT&E Project Cost Analysis
(Exhibit R-3 Page 19 of 19)

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